Remarks

Applicants' claims 1-8, 11-19, and 22 were rejected in the second Office action mailed August 11, 2004 under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 5,917,930) in view of Larson et al. (U.S. Patent No. 4,646,287). See 2nd Office action, 2. Claim 23 was rejected under § 103(a) as being unpatentable over Chen et al. in view of Wine et al. (U.S. Patent No. 6,137,834) and Larson et al. Claims 9-10 and 20-21 were objected to as being upon rejected claims 1 and 12, respectively but would be allowable if rewritten in independent form including all of the limitations of the independent and any intervening claims. See id. at 5. Applicants assert that claims 1-8, 11-19, and 22 are not obvious over Chen et al. in view of Larson et al. and that claim 23 is not obvious over Chen et al. in view of Wine et al. and Larson et al. Therefore, all of Applicants' claims are allowable and Applicants request a Notice of Allowance.

In order for an obviousness rejection to stand, the cited references, alone or in combination, must suggest or teach all the limitations of the claim(s) in question. See MPEP § 2143. Applicants will show that the cited references, alone or in combination, do not suggest or teach all the limitations of claims 1-8, 11-19, 22, and 23 and therefore these claims are not obvious.

Claim 1

Applicants' claim 1 is directed to a method for splicing data streams of MPEG-compressed programs. See Application, claim 1. Specifically, Applicants' claimed method teaches:

> receiving a first input transport stream of first data packets;

receiving a second input transport stream of second data packets to replace selected first data packets in said first stream;

extracting for each data packet a time reference and data packet status information indicating the syntactic function of the data packet;

establishing for each data packet a control data object storing said time reference and said data packet status information;

establishing for ordered sets of said first data packets corresponding ordered sets of control data objects;

establishing for said ordered sets of control data objects other control data objects storing information pertaining to different logical structures, such as frames, sequences of frames and packetized elementary stream packets;

queuing the control data objects in different queues depending on the data packet status or on the status of a group of data packets;

selecting from the queues control data objects associated to data packets to be output in an output stream of data packets;

assembling selected control data objects to a program of associated data packets of different kinds of data;

assembling data packets associated to said selected and assembled control data objects to an output stream of data packets;

outputting said assembled stream of data packets. Claim 1.

As will be shown below, neither Chen et al. nor Larson et al., alone or in combination, teach the following elements of Applicants' claim: establishing for each data packet a control data object; establishing for ordered sets of first data packets corresponding sets of control data objects; establishing other control data objects for the ordered sets of control data objects; queuing the control data objects in different queues depending on the data packet status or the status of a group of data packets; selecting from the queues control data objects associated to data packets to be output

in an output stream of data packets; assembling selected control data objects to a program of associated data packets of different kinds of data; and assembling data packets associated to said selected and assembled control data objects to an output stream of data packets. See id.

Chen et al. teaches a method for splicing a secondary packetized data stream with a primary packetized data stream but uses an approach completely different to that taught by Applicants. In Chen et al., a start signal is provided to indicate when splicing should occur. See Chen et al., col. 2, ln. 18-19. When the start signal is received, a pre-splicing packet, usually the packet closest to the start time which carries an anchor frame start code, is determined. See id., col. 2, ln. 23-27. The pre-splicing packet is processed to discard the anchor frame data and insert a number of stuffing bytes equal to the amount of discarded data into an adaptation field in order to prevent discontinuity at the decoder. See id., col. 2, ln. 31-36. Null packets may also be inserted into the output stream in order to prevent buffer overflow at a decoder. See id., col. 2, ln. 41-48.

Unlike Applicants, Chen et al. does not teach the establishment of or the use of control data objects in splicing streams. The Office action cites elements of Chen et al.'s Figure 4 as teaching, for instance, "means (415, 420, 425) for establishing for each data packet a control data object storing the time references," "means (405) for establishing for ordered sets of the first data packets corresponding ordered sets of control data object [sic] (frames)," etc. See 2nd Office action, 3. However, these cited means do not teach establishing control data objects. In Chen et al., the means cited in the Office action for establishing a control data object are the main stream parser (415), the insertion stream parser (420), and the video buffer manager (425). See Chen et al., col. 6, ln. 13-33. The main stream parser and the insertion stream parser parse the data

packets of their respective streams and provide signals, including a Program Clock Reference, a Decoding Time Stamp, and a video bit rate, to the video buffer manager, which uses the signals to determine a number of null packets to the output stream, for instance, to avoid buffer overflow at the decoder. <u>See id.</u> This is done in two ways: by providing a number of null packets according to the video elementary stream data rates of the main and insertion stream or providing null packets according to a decoding delay of the main and insertion stream and the video elementary stream rates. <u>See id.</u> at col. 11, ln. 18-47. As shown above, Chen et al.'s main stream parser, the insertion stream parser, and the video buffer manager are used to determine the number of null packets to be added to the output stream. None of these elements is used to extract information, such as a time reference and data packet status information, from the data packets and then establish a new object for storing the extracted data, as Applicants' claim 1 teaches for establishing control data objects. (Chen et al. teaches that the main stream and insertion stream parsers provide signals to the video buffer manager, but makes no mention of objects storing data such as a time reference being established for each data packet.) Therefore, Chen et al. clearly does not teach Applicants' establishment of control data objects, nor does Chen et al. teach Applicants' use and manipulation of control data objects to assemble associated data packets in an output stream.

Larson et al. also does not teach elements of Applicants' claim 1. According to the Office action, Larson et al. teaches means for establishing for each data packet another control data object including the data packet status information. <u>See</u> 2nd Office action at 3. Applicants contend that Larson et al. does not teach establishing control data objects.

Larson et al. discloses a packet switching system having two nodes, one of which transmits idle packets to the other during idle periods to condition the link connecting the two nodes. See Larson et al., col. 2, ln. 20-60. The idle packets are marked as such by their packet identifier. See id., col. 2, ln. 38-43. When an idle packet is sent, the receiving node's idle packet detector determines whether the received packet is an idle packet by examining the packet identifier; if the packet is an idle packet, it is blocked and discarded. See id., col. 6, ln. 27-37. Unlike Applicants, Larson et al. does not teach extracting data packet information, such as data packet status information, and establishing a control data object for each data packet that stores the extracted information. Therefore, Larson et al. does not teach the establishment of control data objects.

Neither Chen et al. nor Larson et al., alone or in combination, teach or suggest all the limitations of Applicants' claim 1 and therefore claim 1 is not obvious. Applicants have shown neither Chen et al. nor Larson et al. teach the establishment of control data objects. Neither of these references teaches or suggests the use and manipulation of the established control data objects to assemble associated data packets in an output stream. Therefore, these references, alone or in combination fail to teach the following elements of Applicants' claim 1 relating to control data objects: establishing for each data packet a control data object; establishing for ordered sets of first data packets corresponding sets of control data objects; establishing other control data objects for the ordered sets of control data objects; queuing the control data objects in different queues depending on the data packet status or the status of a group of data packets; selecting from the queues control data objects associated to data packets to be output in an output stream of data packets; assembling selected control data objects to a program of associated data packets

of different kinds of data; and assembling data packets
associated to said selected and assembled control data objects
to an output stream of data packets. See claim 1. Since
neither of the cited references, alone or in combination,
teaches any of the these claim limitations, claim 1 is not
obvious and Applicants request withdrawal of this rejection.

Claims 2-11

Applicants' claims 2-11 are dependent claims of
independent claim 1. As shown above, independent claim 1 is
not obvious. Therefore, its dependent claims are also not
obvious for at least the same reasons. Applicants request
these claims be allowed.

Claim 12

Applicants' claim 12 is directed to an apparatus for
splicing data streams in MPEG-compressed programs. See
Application, claim 12. Neither Chen et al. nor Larson et al.
teaches or suggests, alone or in combination, the following
elements of Applicants' claim: means for establishing for
each data packet a control data object storing time reference
and data packet status information; means for establishing for
ordered sets of first data packets corresponding ordered sets
of control data objects; means for establishing for said
ordered sets of control data objects other control data
objects storing information pertaining to different logical
structures of higher level than the data packets such as
frames, sequences of frames and packetized elementary stream
packets; means for queuing the control data objects in
different queues dependent on the data packet status or on the
status of a group of data packets; means for selecting from
the queues control objects associated to data packets to be
output in an output stream of data packets; means for
assembling selected control objects to a program of associated
data packets of different kinds of data; and means for

assembling data packets associated to said selected and assembled control data objects to an output stream of data packets. See id.

As shown above, neither Chen et al. nor Larson et al., alone or in combination, teaches or suggests the establishment and manipulation of control data objects in splicing data streams. Therefore, neither of these references teaches or suggests means for establishing control data objects or means for manipulating these objects to create an output stream of data packets. Chen et al. and Larson et al. fail to teach the following elements of Applicants' claim concerning control data objects: means for establishing for each data packet a control data object storing time reference and data packet status information; means for establishing for ordered sets of first data packets corresponding ordered sets of control data objects; means for establishing for said ordered sets of control data objects other control data objects storing information pertaining to different logical structures of higher level than the data packets such as frames, sequences of frames and packetized elementary stream packets; means for queuing the control data objects in different queues dependent on the data packet status or on the status of a group of data packets; means for selecting from the queues control objects associated to data packets to be output in an output stream of data packets; means for assembling selected control objects to a program of associated data packets of different kinds of data; and means for assembling data packets associated to said selected and assembled control data objects to an output stream of data packets. See id. Since neither Chen et al. nor Larson et al., alone or in combination, teaches or suggests any of these claimed elements, Applicants' claim 12 is not obvious. Applicants therefore request a withdrawal of this rejection.

Claims 13-22

Applicants' claims 13-22 are dependent claims of independent claim 12. As shown above, independent claim 12 is not obvious. Therefore, its dependent claims are also not obvious for at least the same reasons. Applicants therefore request a withdrawal of the rejections of these claims.

Claim 23

Applicants' claim 23 is directed to a computer program product for performing a method of splicing data streams in MPEG-compressed programs. It was rejected as obvious over Chen et al. in view of Wine et al. and Larson et al. See 2nd Office action at 5. According to the Office action: ". . . [I]t would have been obvious to a person of ordinary skill in the relevant art employing an apparatus/method for splicing data streams as taught by Chen et al[.] . . . [and] Larson et al[.] . . . [to] . . . incorporate the well known concept of a computer system that is programmed to perform the splicing compressed bitstreams as taught by Wine et al." Id., 5. Applicants contend that Chen et al., Larson et al., and Wine et al., alone or in combination, neither teach nor suggest a computer program product able to perform the following steps, as claimed by Applicants: establishing for each data packet a control data object; establishing for ordered sets of first data packets corresponding sets of control data objects; establishing other control data objects for the ordered sets of control data objects; queuing the control data objects in different queues depending on the data packet status or the status of a group of data packets; selecting from the queues control data objects associated to data packets to be output in an output stream of data packets; assembling selected control data objects to a program of associated data packets of different kinds of data; and assembling data packets associated to said

selected and assembled control data objects to an output stream of data packets. See Application, claim 23.

Chen et al., Larson et al., and Wine et al. fail to teach or suggest a computer program product that establishes and manipulates control data objects in splicing data streams. Therefore, these references do not teach all the limitations of Applicants' claim 23 concerning control objects. As indicated above, the elements of Applicants' claim 23 which are not taught or suggested by these references, alone or in combination, includes a computer program product able to perform the following steps: establishing for each data packet a control data object; establishing for ordered sets of first data packets corresponding sets of control data objects; establishing other control data objects for the ordered sets of control data objects; queuing the control data objects in different queues depending on the data packet status or the status of a group of data packets; selecting from the queues control data objects associated to data packets to be output in an output stream of data packets; assembling selected control data objects to a program of associated data packets of different kinds of data; and assembling data packets associated to said selected and assembled control data objects to an output stream of data packets. See Application, claim 23. Therefore, this claim is not obvious in light of these references and Applicants request a withdrawal of this rejection.

Conclusion

Applicants have shown that claims 1-8, 11-19, and 22 are not obvious in light of the cited references. Applicants therefore request a Notice of Allowance for claims 2-13.

Respectfully submitted,

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